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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/600,075	06/20/2003	Yukio Morishige	16748	9161

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EXAMINER

BUEKER, RICHARD R

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 07/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/600,075

Applicant(s)

MORISHIGE ET AL.

Examiner

Richard Bueker

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 09 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 7 and 9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5/9/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Claims 1-4, 6 and 8 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Mikoshiba (5,803,974), who discloses a substrate processing apparatus that includes a laser (see Fig. 1 and col. 4, lines 35-39) for radiating a laser beam to a deposition area on a substrate and a plasma unit for turning a gas into a plasma state. Mikoshiba teaches the use of an arc discharge (col. 4, lines 47-49 and col. 22, lines 36-39) to form the plasma. Mikoshiba also teaches (col. 10, lines 31-33) that the generated plasma can flow into contact with the substrate. The plasma formation gas of Mikoshiba can be considered to inherently be a "pretreating" gas. Also, the apparatus of Mikoshiba has an inherent capability of being used with the types of plasma formation gases that applicants describe as pretreating gas. The type of gas to be used in an apparatus is an intended use of the apparatus and is not as apparatus limitation per se. Also, regarding claim 8, it is noted that the claim limitation of "a substrate holder capable of moving a substrate having a pattern, said pattern having a defective portion" only defines a substrate holder and does not require any particular type of substrate to be present. Mikoshiba discloses (col. 9, lines 23-25) that his substrate holder is "capable of moving a substrate" as recited in claim 8, and Mikoshiba's substrate holder is inherently capable of holding a substrate having a defective pattern on it. Mikoshiba's apparatus inherently or at least obviously must include a control unit to control the operation of the laser and plasma unit to the extent required by claim 8.

Claims 1, 3 and 6 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hongo (5,182,231), who discloses

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(see Fig. 1) a laser CVD device that is a pattern defect correcting apparatus, comprising a plasma pretreating unit (see plasma cleaning electrode 9 or plasma sputter electrode 21 for example) in combination with a laser CVD unit (23, 24, 25, 26, 22) as claimed in claims 1, 3 and 6.

Claims 1, 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hongo (5,182,231) taken in view of Shvets (6,419,752). Hongo's apparatus is a micro-fabrication apparatus that is a pattern defect correcting apparatus. Hongo also teaches the use of a focused ion beam (FIB) unit (see FIB 20 of Fig. 1) to remove material from a specific location on a substrate, prior to depositing a coating on that specific location by laser CVD using the laser beam 23. Hongo does not discuss the use of a plasma beam to remove material prior to the laser CVD step. Shvets however, discloses a plasma beam micro-fabrication apparatus, and he teaches that his plasma beam unit can desirably be used as a less expensive and less complex alternative to using a FIB unit for the material removal step in a micro-fabrication process. In view of this teaching of Shvets, it would have been obvious to one skilled in the art to modify the apparatus of Hongo by substituting a plasma pretreating unit of the type taught by Shevets for the FIB unit of Hongo.

Claims 2, 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hongo (5,182,231) taken in view of Shvets (6,419,752) for the reasons stated in the previous paragraph, taken in further view of Tsuchimoto (4,123,316), Ono (5,108,535) and/or Mikoshiba (5,803,974). Shvets does not specifically suggest the use of an arc to form his plasma. Shvets does, however, teach (col. 8, lines 10-20) that the

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particular mechanism for forming the plasma is not critical, and that a variety of conventional plasma forming means can be used. Tsuchimoto (paragraph bridging cols. 5 and 6), Ono (col. 10, lines 22-30) and Mikoshiba (col. 4, lines 47-49 and col. 22, lines 36-39) teach that an arc discharge was a conventional, well known way of generating a plasma for substrate processing. It would have been obvious to one skilled in the art to use an arc discharge to provide the plasma activation desired by Shvets, because Tsuchimoto, Ono and Mikoshiba teach that arc discharges can successfully be used to activate a plasma for processing the surface of a substrate.

The rejection based on Frey has been removed in view of applicants' amendment.

Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As pointed out by applicants, the previous office action incorrectly identified the Mikoshiba reference as Patent No. 5,753,320, instead of Patent No. 5,803,974. It is noted also that 5,753,320 and 5,803,974 are based on the same parent application and their disclosures are identical.

Applicants have argued that Mikoshiba does not disclose or suggest pretreating the substrate with plasma gas prior to the CVD of film. It is noted, however, that claims 1-6 and 8 are apparatus claims, not process claims. The claim 1 limitation of "wherein the deposition area of said substrate is pretreated by said plasma unit supplying the plasma gas to the substrate prior to a film formed by CVD over said deposition area" is a recitation of a process of using the apparatus, and as such it is a recitation of an

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intended use of the claimed apparatus, and the apparatus is not limited to only this use. This limitation does require the apparatus to be inherently capable of being used according to the recited process. The apparatus disclosed by Mikoshiba (5,803,974) is inherently capable of being used in the manner required by this recitation of intended use. The plasma unit of Mikoshiba is inherently capable of being operated to supply a plasma gas to the deposition area of the substrate prior to the laser beam being activated to deposit a film by CVD. Supplying the plasma gas while the laser was not activated would constitute a pretreating step to the extent required by the claims. Also, Mikoshiba (5,803,974) provides a description of the operation of his apparatus (see col. 9, lines 16-39, for example) in which he describes the step of supplying plasma gas to the substrate processing chamber prior to a step of irradiating the substrate by laser. This step of Mikoshiba of supplying plasma gas prior to laser CVD meets the definition of "pretreating" and it meets the claim 1 limitation of "wherein the deposition area of said substrate is pretreated by said plasma unit supplying the plasma gas to the substrate prior to a film formed by CVD over said deposition area".

Applicants have argued that Mikoshiba does not disclose or suggest the problem of a laser deposited film cracking or failing. It is noted, however, that applicants' apparatus claims are not limited to processes related to films that crack or fail.

Regarding the rejection of claims 1, 3 and 6 over Hongo alone, applicants' arguments are not convincing because they do not address the features of Hongo that were discussed in the rejection. The rejection identifies either plasma cleaning electrode 9 or plasma sputter electrode 21 shown in Fig. 1 as representing a plasma

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pretreating unit. See also col. 4, lines 30-65 and col. 5, lines 30-49 of Hongo. The plasma cleaning unit of Hongo which incorporates a plasma cleaning electrode 9 is a "plasma unit for turning pretreating gas into a plasma state in atmosphere and supplying a plasma gas to a substrate" as recited in claim 1. Applicants also state that the office action on page 5 seems to acknowledge that Hongo does not disclose a plasma pretreatment means. This is incorrect. In the rejection of Hongo in view of Shvets on page 5 of the office action, a different reason for obviousness is presented that is not related to the rejection based on Hongo alone.

Applicants have emphasized the phrase "in atmosphere". It is noted, however, that this phrase adds nothing to the claims because it fails to identify or define any particular type of atmosphere. All processes and apparatus operate in an atmosphere of some type.

Regarding the rejection based on Hongo in view of Shvets, applicants have argued that "there would have been no suggestion or motivation for combining Hongo and Shvets". As noted in the rejection, however, Hongo's apparatus is a micro-fabrication apparatus that is a pattern defect correcting apparatus. Hongo teaches the use of a focused ion beam (FIB) unit (see FIB 20 of Fig. 1) to remove material from a specific location on a substrate, prior to depositing a coating on that specific location by laser CVD. Hongo does not discuss the use of a plasma beam to remove material prior to the laser CVD step. Shvets however, discloses a plasma beam micro-fabrication apparatus, and he teaches that his plasma beam unit can desirably be used as a less expensive and less complex alternative to using a FIB unit for the material removal step

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in a micro-fabrication process. In view of this teaching of Shvets, it would have been obvious to one skilled in the art to modify the apparatus of Hongo by substituting a plasma pretreating unit of the type taught by Shevets for the FIB unit of Hongo. Thus, Shvets explicitly provides the motivation for combining his plasma pretreatment unit with Hongo's laser CVD unit.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

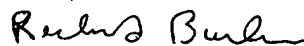
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Bueker whose telephone number is (571) 272-1431. The examiner can normally be reached on 9 AM - 5:30 PM, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parvis Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Richard Bueker
Primary Examiner
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